

P. 4126 W 1277

ZANZIBAR PROTECTORATE.

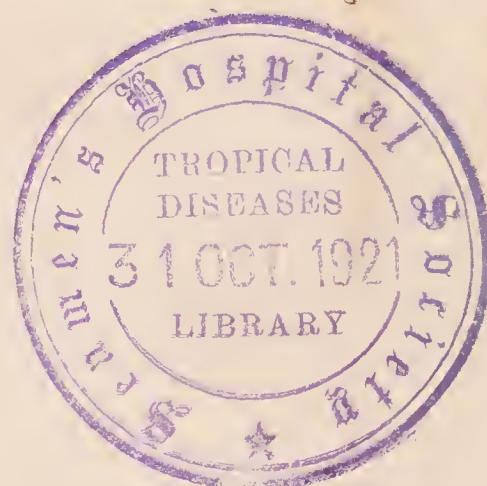
ANNUAL REPORT

ON THE

MEDICAL DIVISION

FOR THE YEAR,

1918.



ZANZIBAR.

PRINTED BY THE GOVERNMENT PRINTER

1920.



Digitized by the Internet Archive
in 2019 with funding from
Wellcome Library

<https://archive.org/details/b31479650>

ZANZIBAR PROTECTORATE.

REPORT ON THE MEDICAL DIVISION

FOR THE YEAR 1918.

General.—The year has been notable for the continued paucity of medical staff, a slight reduction in additional work for the Services as compared to the previous few years, and a share in the pandemic of Influenza.

It was found impossible to spare even a single Medical Officer for residence in Pemba Island, where from March to the close of the year the Nursing Sister was in charge of the Chake Chake Hospital. Dr. de Sousa, acting Principal Medical Officer, visited Pemba for one or two days about twice a month by Government steamers.

The general health of the residents has been satisfactory. European births numbered 3, 2 of British and 1 of Dutch nationality.

Of the three deaths recorded only one was that of a resident proper the cause being Influenza complicated by Pneumonia; the other two were naval ratings, the causes Malaria with Enteric and Pneumonia respectively.

Common Ailments.—Amongst residents digestive and particularly hepatic disorders, catarrhal conditions from chill, mild sub-tertian malaria, rheumatism and manifestations of neurasthenia predominate.

Invaliding and Deaths of Officials.—No European Officer was invalided during the year. One officer succumbed to Pneumonia complicating Influenza.

Hospital for Europeans.—The big Arab building known as the Mambo Msiige opened in 1914 as a temporary European Hospital was still in use throughout the year. The unsuitability of this rambling building for modern hospital purposes owing to irregular architectural design, waste space, inconvenient passages and stairways, mural decorations, recesses, etc. harbouring dust, constant need of repairs for leaking roofs, and the ravages of white ants has frequently been urged, as also the amount of unnecessary labour and fatigue imposed upon the nursing and menial staff.

As compared to 335 in-patients in 1915, 533 in 1916, and 504 in 1917, there were 342 admissions during 1918. Of these 286 were men from H. B. M's. Army, Navy and Naval Reserves.

NUMBER OF CASES TREATED.

Month		Government	Non-Government	Navy and Army	Total.
January	..	1	5	17	23
February	..	1	7	32	40
March	..	..	6	34	40
April	..	1	4	23	28
May	..	..	1	22	23
June	..	3	2	37	42
July	..	2	3	21	26
August	..	..	1	17	18
September	..	1	1	30	32
October	..	1	2	13	16
November	..	6	4	27	37
December	..	1	3	13	17
Total	..	17	39	286	342
Total for 1917	..	5	41	458	504

Of the 342 cases 11 were female patients. Table I includes the Return of Diseases and Deaths (In-patients) for the European Hospital in 1918.

The following diseases perhaps call for some comment:—

Dengue.—2 cases, none in the previous two years.

Dysentery.—3 cases as compared to 16 and 15 in the two preceding years.

Enteric.—No recorded case, 9 admissions in 1917.

Influenza.—18 admissions with one fatality. No cases previously recorded.

Malaria.—91 cases as compared to 204 in 1917, and 119 in 1916. Of these 91 patients only 4 were residents proper.

Blackwater Fever.—1 case, that of a European resident in Pemba.

Pneumonia.—6 cases with no death.

Sun and Heat Stroke.—3 cases, as for 1917.

SUBORDINATE OFFICIALS.

Admissions as in-patients to Hospital in Zanzibar numbered 75 as compared to 95, 85 and 82 in the previous three years. Included were the following conditions mainly referable to the tropics or of interest, as compared to the previous three years.

	1915.	1916.	1917.	1918.
Malaria	25	45	65	41
Undefined Fever	15	...	4	1
Blackwater Fever...	2	3	2	1
Dengue	1	...	...	...
Dysentery	...	...	1	...
Influenza	...	...	...	9

The undesirable houses and unwholesome surroundings in which the majority of subordinates live in town has previously been commented upon as also the unsuitable pattern of quarters and their want of efficient protection against mosquitoes in all out-stations.

NATIVES.

Commoner Diseases.—Ulcers, rheumatism, bronchial troubles, venereal diseases, malaria and filarial affections, and ankylostomiasis predominate.

GOVERNMENT HOSPITAL FOR NATIVES & SUBORDINATES.

In 1918 the number of in-patients was 1281 with 108 deaths, as compared to 1038 and 74 deaths in 1917.

Out-patients numbered 7863, an increase of 388 over the figure for the previous year.

Operations under general anaesthesia numbered 93 as compared to 111, 84, 66 and 184 in the previous four years.

To the free Siwa Hajee beds for sick Indian paupers there were 19 admissions, an increase of 7 over the number for 1917.

Table I includes the diseases and deaths for both in-patients and out-patients for the year for the Natives' and Subordinates Hospital in Zanzibar, Chake Chake Hospital in Pemba, and for all the Out-District Dispensaries of both Islands.

The following diseases perhaps call for some comment:—

INFECTIVE DISEASES.

Beri-Beri.—9 cases with 2 deaths as compared to 1, 3 and 5 cases without deaths in the previous 3 years. Of these cases some 6 were amongst Chinamen working at *beche de mer* industry in the North of Pemba and in Mafia Island.

Cerebro-Spinal Fever.—2 cases with 1 fatality as compared to 5 with 1 death in 1917.

Dengue.—No cases: 1, 5 and 4 in previous three years.

Dysentery.—6 admissions and 2 deaths, 7 out-patients.

Enteric.—No cases: 2 admissions in 1917.

Gonorrhoea and Urethritis.—17 in-patients and 374 out-patients, the corresponding figures being 8 and 285 for 1917, 27 and 671 for 1916.

Influenza.—133 in-patients with 11 deaths, 14 out-patients. No cases in previous recent years.

Malaria and Undefined Fever.—Malaria, 254 in-patients with 3 fatalities, out-patients 326, totalling 580. The total for 1917 was 826, and for 1916 it was 1043. Undefined Fever 14 in-patients, with 2 deaths, 1070 out-patients, giving a total of 1084 cases, as compared with 650 and 920 in the previous two years.

Blackwater Fever.—5 admissions with 1 fatality as compared to 6, 12 and 10 cases recorded in the previous three years. Of the 5 cases only 2 were residents in this Protectorate, both were Government subordinates stationed in Pemba and their attacks mild.

Pneumonia.—47 in-patients with 18 deaths, 3 out-patients. A large increase over the 20 admissions with 5 fatalities recorded for 1917 and influenza an undoubted factor.

Syphilis.—Admissions and out-patients are recorded as 139 with 2 deaths. The totals were 102, 240 and 380 in the previous three years.

Tetanus.—No admissions.

Tuberculosis.—37 in-patients with 8 deaths, 5 out-patients. In-patients in 1916 and 1917 numbered 24 and 15 respectively.

GENERAL DISEASES.

Anæmia.—199 cases with 1 death. In the previous three years 100, 318 and 648 cases recorded. Probably most cases are due to Ankylostomiasis.

Debility.—38 in-patients, 10 deaths and 229 out-patients as compared to 24, 7 and 150 in 1917.

Chronic Rheumatism.—7 in-patients, 566 out-patients.

LOCAL DISEASES.

Bronchitis.—34 in-patients, 749 out-patients.

Hepatitis Acute.—7 in-patients as compared to 0 and 28 in the two previous years.

Hepatic Congestion.—14 in-patients and 393 out-patients, 4 in-patients and 373 out-patients in 1917.

Splenitis.—39 cases as compared to 32 in 1917, and 207 in 1916

Filarial Lymphangitis, Elephantiasis and Filariasis.—41 in-patients with 6 deaths, 76 out-patients as compared to 24 in-patients, 3 deaths, 76 out-patients for 1917, and 54 in-patients, 6 deaths and 125 out-patients in 1916.

Hæmaturia.—1 in-patient, 5 out-patients. In 1917 only 2 out-patients are recorded.

Tumours, Malignant.—2 fatal cases admitted, both African, Carcinoma of lower jaw and fibro-chondroma of chest wall.

Ankylostomiasis.—201 in-patients with 30 deaths, 135 out-patients, a total of 436 cases. The corresponding totals in the three previous years were 182, 173 and 268.

ZIWANI MILITARY LINES.

With the establishment of the 1/7th King's African Rifles at Ziwani as their dépôt, the fittings and stock of the Hospital were taken over from the Zanzibar Government Medical Division and the regimental Medical Officer with his own subordinates and native staff administered it. No details of incidence of diseases, etc., are available for record here. At the close of the year the Ziwani Hospital reverted to civilian Government control.

OUT-DISTRICT DISPENSARIES.

Hospital accommodation and organization within the town of Zanzibar is sufficient and well established, as also in the township of Chake Chake in Pemba Inland, but the time has more than arrived when hospital and efficient dispensary treatment should be extended further afield throughout the Protectorate. Centres should be established in populous out-district areas for the treatment of simpler cases and from which the transport of more serious cases to the central town hospitals can be arranged.

In Zanzibar Island the out-district dispensaries at Mkokotoni and Chwaka have for a considerable number of years done useful work and have proved that the natives are willing to avail themselves of Western treatment, but they are both situated too close to Government offices, bungalows and quarters, and are not accessible to the shy native, further, the resident Dispensers' training and abilities in the practice of medicine and surgery are necessarily limited. The Chwaka Dispensary and quarters became ruinous at the beginning of the year and were vacated, a senior hospital boy with a limited stock of simple drugs and dressings was kept there and the station visited once weekly by a Dispenser. As compared to 6 in-patients and 680 out-patients attended to in 1917 at this dispensary there were 392 outpatients in 1918, mostly from the local Government office and police staff.

At Mkokotoni Dispensary there are recorded 20 in-patients with 1 death and 1172 out-patients, as compared to 35 and 2406 in 1917 and 45 and 1746 in 1916.

With the vacation of the Chwaka buildings, Mwera was selected as a useful populous centre, highly malarious, and with much converging plantation traffic. Here the furniture and stock from Chwaka were accommodated in an empty bungalow and a Dispenser spent three days of each week there, going out from town by motor. In 5 months 682 out-patients received treatment, when the bungalow being required for other purposes, the fittings were moved into Mkoani house by the kind permission of the Director of Agriculture, and to the close of the year a further 2287 out-patients were treated, mainly employees of the Agricultural Department.

The building of one new Out-District Dispensary was approved for 1918 and after consultation with the District Commissioner and Director of Agriculture its erection at Salem was agreed upon and work on it had begun at the close of the year. This Dispensary should prove useful to the large number of employees of the Agricultural Department living in that district.

A sum of £250 was approved for the equipment of a small Travelling Hospital for out-district work, but shortage of staff and high cost of equipment precluded its initiation. It is believed that the staff of such a travelling hospital working slowly and methodically through the out-districts every year would accomplish most useful work treating cases or arranging for their transference to dispensaries or town hospitals, giving simple advice on prevention of disease, instituting sanitary improvements in villages, performing vaccinations and carrying out research work in prevalent diseases and all the numerous fields awaiting investigation. The staff should represent both Medical and Public Health Divisions.

In Pemba Island, as has been stated, there was no resident Medical Officer for 10 months of the year. The following is the record of numbers of patients for 1918:—

	In-patients.	Deaths.	Out-patients.
Chake-Chake Hospital ...	357	23	4292
Weti Out-District Dispensary ...			2411
Mkoani Out-District Dispensary...			1750

Since it is impossible to increase the accommodation of the Chake Chake Hospital owing to its cramped site it is urgently necessary to extend the Weti Dispensary into a hospital with resident Medical Officer and Nursing Sister.

Further Out-District Dispensaries are also needed in Pemba Island.

KILIMANI ASYLUM FOR INSANE NATIVES.

This building affords only very limited cell accommodation and its cramped court-yards are unsuitable and insufficient for exercise. The inmates are practically all criminal lunatics. All water for cell washing, etc. has to be carried from the neighbouring prison but the cleanliness of the buildings has been satisfactorily maintained.

The admissions numbered 11 (8 males and 3 females) as compared to 19 in 1917, and 22 in 1916.

	Remaining at end of 1917.	Admitted.	Discharged.	Deaths.	Remaining at end of 1918.
Males ...	4	8	5	5	2
Females ...	3	3	1	3	2
Total ...	7	11	6	8	4

KILIMANI CENTRAL PRISON.

The cleanliness and good order in this prison have been maintained.

Prisoners medically examined on admission to prison numbered 589 (males 553 and females 36) as compared to 488, 450, 666 and 913 in the previous four years.

The following gives the numbers of prisoners treated in recent years:—

Year.	Out-patients.	In-patients.
1914	842	152
1915	481	111
1916	481	107
1917	583	77
1918	1010	267

Deaths amongst prisoners treated in the Prison Infirmary and Native Government Hospital amounted to 19 as compared to 10, 9, 13 and 15 in the four previous years. This mortality seems heavier than it should be, but enquiry by a Medical Board failed to elicit any definite factor attributable to prison routine, diet, sanitation, etc. apart from that physical and mental condition of general asthenia produced in all natives by imprisonment.

The recorded causes of the 19 deaths were as follows:—

Ankylostomiasis and Debility	...	6
Diarrhoea	...	3
Epilepsy	...	2
Beri-Beri	...	1
Debility	...	1
Dysentery	...	1
Enteritis	...	1
Filariasis	...	1
Stomatitis	...	1
Tertiary Syphilis	...	1
Undefined Fever	...	1
Total	...	19

The new Prison Infirmary has proved useful and of practical design, but it is to be regretted that the provision of quarters for a resident Sub-Assistant Surgeon or Dispenser, as originally planned, should have been cancelled. In this report for last year the fear was expressed that some of the more serious cases of illness would have their chances of recovery lessened by the change from the skilled nursing of our Nursing Sisters in the Native Hospital to the attentions of native ward boys at the Prison Infirmary.

STAFF.

Dr. Curwen, Principal Medical Officer, was absent on privilege leave from 8th February to the close of the year.

Dr. de Sousa, acted as Principal Medical Officer throughout the above period and paid frequent visits to Pemba Island.

Dr. Waller, temporary Medical Officer, was stationed in Zanzibar throughout the year.

Dr. Dunderdale, stationed in Pemba, left on 3rd March on the termination of 12 months probation.

Dr. Howard, appointed Temporary Medical Officer of Pemba, arrived on 24th December and proceeded to Chake Chake, Pemba.

Mrs. Zurcher, Matron of Nursing Staff, was on duty in Zanzibar throughout the year except for a period of special short leave to South Africa from 5th September to 15th December.

Miss Brewerton, Nursing Sister, was Sister in Charge of temporary European Hospital throughout the year.

Miss Chambers, Nursing Sister, was stationed at Natives' and Subordinates' Hospital, acting Matron in the absence of Mrs. Zurcher, and for a short period in Pemba.

Miss Marson and Miss Fox, Nursing Sisters, were on duty both at Natives' and Subordinates' Hospital and in Pemba through the year.

Miss Gittins, Nursing Sister, arrived on first appointment on 27th March and did duty in both Zanzibar Hospitals and in Pemba.

Miss Huntley, appointed temporary Nursing Sister for the period of the war, arrived on 22nd February. Mrs. Howard, appointed temporarily as Nursing Sister for Chake Chake Hospital, Pemba, arrived on 24th December.

Sub-Assistant Surgeon Mathias, stationed at Weti in Pemba, proceeded on leave on 27th February and resigned on 4th November. Sub-Assistant Surgeon Joshi returned from privilege and sick leave on 10th March and was posted to Weti, Pemba. Sub-Assistant Surgeon Washikar, stationed at Zanzibar Native Hospital, proceeded on leave on 27th February and resigned on 5th October. Sub-Assistant Surgeon Sikdar, on probation, was stationed at Mafia Island and was permitted to resign on 29th July.

Two new Sub-Assistant Surgeons were appointed on probation. Sub-Assistant Surgeon Ram Rao arriving on 11th June was stationed at Zanzibar Native Hospital. Sub-Assistant Surgeon Apte, arriving on the same date, after a period of duty at Zanzibar Native Hospital was put in charge of Prison Infirmary and Lunatic Asylum at Kilimani.

The work of Dispensers at the Government Hospitals and Out-District Dispensaries has been satisfactory.

Mr. I. B. Martins, clerk and store-keeper, proceeded on well earned leave in September, Mr. S. R. Fernandes from Chake Chake, Pemba, acting for him in his absence.

The work of the entire Superior, Subordinate and African Staffs has been heavy throughout the year owing to depletion in numbers, additional duties, postponements of earned leave, and, towards the end of the year, the epidemic of Influenza.

Even at the close of the year, only two Medical Officers, of the full complement of five, were permanent officials, two were temporary officers, and there remained one vacancy.

Statement of Expenditure and Revenue for the year 1918.

EXPENDITURE.

Details	Estimated					Actual				
	Rs.	cts.		s.	d.	Rs.	cts.	£	s.	d.
MEDICAL.										
Personal Emoluments ..	109,743	0	7,316	0	0	91,600	30	6,106	13	9
Other Charges.										
Fuel and Light ..	6,000	0	400	0	0	5,058	64	337	4	10
Incidental Expenses ..	700	0	47	0	0	459	29	30	12	5
Maintenance of Hospitals ..	30,000	0	2,000	0	0	29,129	28	1,941	19	0
Medical and Surgical Stores ..	20,000	0	1,334	0	0	17,345	23	1,156	7	0
Passages ..	15,000	0	1,000	0	0	9,637	97	642	10	7
Purchase of Opium ..	5,000	0	333	0	0	2,930	11	195	6	10
Rent of house occupied by Principal Medical Officer ..	1,200	0	80	0	0	1,200	0	80	0	0
Travelling Expenses ..	1,200	0	80	0	0	941	89	62	15	10
Total Expenditure ..	188,843	0	12,590	0	0	158,302	71	1,0553	10	3
1. a. Special Expenditure										
Furniture and Equipment for										
New Dispensary ..	600	0	40	0	0	261	8	17	8	1
Typewriter ..	750	0	50	0	0	435	0	29	0	0
Bedsteads and wire mattresses for Hospitals ..	1,500	0	100	0	0	1,095	5	73	0	1
2 Bicycles ..	450	0	30	0	0	450	0	30	0	0
Total Expenditure ..	192,143	0	12,810	0	0	160,543	84	10,702	18	5

REVENUE.

Details	Estimated					Actual				
	Rs.	cts.	£	s.	d.	Rs.	cts.	£	s.	d.
Hospital charges from European and Native Hospitals, Sale of Drugs etc. ..	25,000	0	1,667	0	0	22,583	68	1,505	11	7
Sale of Opium ..	15,000	0	1,000	0	0	10,744	75	716	6	4
Total Revenue ..	40,000	0	2,667	0	0	33,328	43	2,221	17	11

TABLE 1.

Return of Diseases and Deaths for the Year 1918
for the Protectorate.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients	Out-patients	
	Admissions	Deaths	Admissions	Deaths	Total
INFECTIVE DISEASES.					
Beri-Beri	..	..	9	1	9
Cerebro-Spinal Fever	..	..	2	1	..
Chicken-Pox	..	..	1	..	..
Dengue	2	..	..	..	..
Diphtheria	..	..	..	..	1
Dysentery	3	..	3	2	22
Gonorrhœa	1	..	15	..	819
Influenza	18	1	115	10	972
Malaria—(a) Quartan	..	..	..	..	2
(b) Sub-Tertian	90	1	198	5	1349
(c) Chronic Malaria	1	..	8	..	14
(d) Blackwater	1	..	4	1	3
Pneumonia	6	1	41	17	5
Rheumatism, Acute	1	..	5	..	18
Syphilis—(a) Primary	4	..	10	1	131
(b) Secondary	15	..	..	..	25
(c) Tertiary	1	..	12	1	15
Tuberculosis	7	..	30	8	14
Whooping Cough	..	..	..	..	3
Yaws	..	..	1	..	..
Undefined Fever	8	..	6	2	1120
Other Diseases	..	..	..	..	6
INTOXICATIONS.					
Alcoholism	1	..	1	..	3
GENERAL DISEASES.					
Anæmia	..	..	1	1	713
Diabetes	..	..	..	..	8
Exophthalmic Goitre	1	..	..	..	..
Leucocythæmia	..	..	..	..	1
Debility	7	..	31	10	354
Rheumatism—Chronic	..	..	7	..	1337
Other Diseases	..	..	1	1	11
LOCAL DISEASES.					
<i>Diseases of the Nervous System.</i>					
Sub-Section 1.					
Neuritis	..	..	8	..	4
Sun and Heat Stroke	3	..	..	..	..
Other Diseases	..	..	4	..	2
Sub-Section 2.					
Apoplexy	3	..	4	4	3
Paralysis	..	..	2	..	1
Epilepsy	1	..	7	4	8
Neuralgia	..	..	..	..	98
Hysteria	..	..	..	..	1
Vertigo	1	..	1	..	1
Neurasthenia	9	..	..	..	..
Other Diseases	1	..	..	..	3
Sub-Section 3.					
<i>Mental Diseases</i>					
Other Disesaes	1	..	1	..	4
Carried forward ..	186	3	528	69	7080

TABLE I—*continued.*

Return of Diseases and Deaths for the Year 1918
for the Protectorate.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients		Out-patients
	Admissions	Deaths	Admissions	Deaths	Total
Brought forward ..	186	3	528	69	7080
LOCAL DISEASES—(contd.)					
<i>Diseases of the Eye</i>					
Blepharitis	..	..	2	..	12
Conjunctivitis	4	..	6	..	245
Keratitis	..	..	1	..	9
Ulceration of Cornea	..	..	3	..	2
Iritis	1	..	1	..	5
Cataract	..	..	4	..	7
Other Diseases	2	..	4	..	45
<i>Diseases of the Ear</i>					
Inflammation	9	..	1	..	66
Other Diseases	..	..	..	..	67
<i>Diseases of the Nose</i>					
Coryza	1	..	..	..	135
Other Diseases	2	..	..	..	6
<i>Diseases of the Circulatory System</i>					
Endocarditis acute	3	..	..	..	4
Valvular, Mitral	..	..	1	..	..
Aortic	..	..	1	..	..
Tricuspid	..	..	..	..	1
Aneurism	..	..	1	1	11
Other Diseases	1	..	..	..	5
<i>Diseases of the Respiratory System</i>					
Laryngitis	..	..	..	..	13
Bronchitis	3	..	31	..	1885
Broncho-pneumonia	..	..	2	..	3
Pleurisy	1	..	..	..	3
Asthma	1	..	8	..	163
Empyema	2	..	1	..	1
Other Diseases	1	..	1	..	1
<i>Diseases of the Digestive System</i>					
Stomatitis	1	..	5	1	24
Caries of teeth	13	..	1	..	733
Pharyngitis	1	..	3	..	26
Tonsillitis	4	..	2	..	63
Gastritis	2	..	..	..	7
Dyspepsia	1	..	2	..	116
Enteritis	1	..	9	5	6
Appendicitis	7	..	4	..	4
Colitis	..	..	1	..	3
Ulceration of Intestines	..	..	2	..	..
Hernia	2	..	33	..	46
Diarrhoea	4	..	6	2	92
Constipation	1	..	1	..	2945
Colic	..	..	2	..	179
Hæmorrhoids	..	..	4	..	23
Hepatitis, Acute	..	..	7	..	2
Hepatic Congestion	6	..	8	..	562
Cirrhosis, Hepatic	..	..	2	..	..
Jaundice	1	..	2	..	8
Carried forward ..	261	3	690	78	14608

TABLE I—*continued.*

Return of Diseases and Deaths for the Year 1918
for the Protectorate.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients		Out-patients
	Admissions	Deaths	Admissions	Deaths	Total
Brought forward ..	261	3	690	78	14608
LOCAL DISEASES—(contd.)					
<i>Diseases of the Digestive System</i>					
Peritonitis	..	..	..	..	2
Ascites	..	..	..	..	5
Other Diseases	2	..	4	..	29
<i>Diseases of the Lymphatic System</i>					
Splenitis	..	..	1	..	191
Inflammation of Lymphatic Gland ..	3	..	11	..	23
Suppuration of do. ..	..	..	5	..	7
Lymphangitis	..	..	4	..	17
do. Filarial	..	..	5	..	24
Other Diseases	..	..	..	..	3
<i>Diseases of the Urinary System</i>					
Nephritis, Acute	1	..	4	1	2
Cystitis	1	..	1	..	15
Suppression	..	..	2	..	..
Hæmaturia Bilharzial	..	..	1	..	37
Other Diseases	..	..	1	1	7
<i>Diseases of the Generative System</i>					
Male Organs—					
Urethritis, Acute	..	..	1	..	2
do Chronic	..	..	..	..	3
Stricture	..	..	2	..	15
Prostatitis	..	..	..	..	1
Soft Chancre	3	..	3	..	131
Hydrocele	..	..	12	2	123
Orchitis	..	..	5	..	86
Epididymitis	2	..	..	..	1
Abscess of Testicle	..	..	..	..	4
Other Diseases	2	..	1	..	37
Female Organs—					
Ovaritis	..	..	1	..	..
Ovarian Cyst	..	..	2	..	1
Endometritis	..	..	4	..	..
Displacement of Uterus	..	..	2	..	..
Vaginitis	..	..	1	..	..
Amenorrhœa	..	..	..	..	3
Dysmenorrhœa	..	..	..	..	2
Menorrhagia	..	..	..	..	5
Leucorrhœa	..	..	..	..	2
Abortion	2	..	..	..	..
Puerperal Septicæmia	..	..	1	1	..
Mastitis	..	..	1	..	3
Abscess, Breast	..	..	..	..	2
Confinement	2	..	7	..	..
Other Diseases	..	..	7	1	8
<i>Diseases of the Organs of Locomotion</i>					
Osteitis	5	..	1	..	2
Arthritis	3	..	2	..	3
Synovitis	2	..	17	..	16
Bursitis	3	..	1	..	..
Myalgia	..	..	..	..	78
Other Diseases	1	..	..	..	12
Carried forward ..	293	3	800	84	15510

TABLE I—*continued.*Return of Diseases and Deaths for the Year 1918
in the Protectorate.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients		Out-patients
	Admissions	Deaths	Admissions	Deaths	Total
Brought forward ..	293	3	800	84	15510
LOCAL DISEASES—(<i>contd.</i>)					
<i>Diseases of Connective Tissue</i>					
Cellulitis	7	..	12	..	6
Abscess	6	..	26	..	195
Elephantiasis	..	..	8	1	27
Other Diseases	..	..	1	1	6
<i>Diseases of the Skin</i>					
Urticaria	1	..	..	..	7
Eczema	1	..	..	..	60
Boils	5	..	..	..	190
Carbuncle	..	..	..	..	19
Herpes	..	..	..	..	3
Psoriasis	..	..	..	..	1
Tinea	..	..	..	..	65
Tinea Cruris	..	..	..	..	20
Scabies	1	..	..	..	443
Prickly Heat	..	..	..	..	15
Ulcers	10	..	89	1	2032
Other Diseases	..	..	3	..	80
INJURIES					
General	11	..	17	2	319
Local	5	..	90	4	1024
Bullet wound	2	..	..	..	..
Tumours, Simple	..	..	12	..	5
do Malignant	..	..	2	2	..
Other Diseases	..	..	..	..	8
Poisons	..	..	2	1	1
Snake bite	..	..	1	..	3
Parasites Trematoda (Flukes)	..	..	..	..	20
Nematoda—					
Ascaris	..	..	1	..	16
Filariasis	..	..	28	5	53
Ankylostomiasis	..	..	201	30	195
Other Diseases	..	..	..	..	2
Insecta—					
Myiasis	..	..	..	..	117
Total ..	342	3	1296	131	20439

H. CURWEN,
Principal Medical Officer.

REPORT ON THE PUBLIC HEALTH DIVISION

FOR THE YEAR 1918.

It is impossible to compose this Report without reference to the untimely death of the Medical Officer of Health, Alexander Campbell Nicholson McHattie, M.B., CH.B., (Ed.) D.P.H., (Camb.) D.T.M. & H., in his first tour of service. Energetic, conscientious, intolerant of delay and never sparing of himself, he was severely overworked throughout his tour owing to depletion of staff and after 26 months of duty he succumbed to Influenza complicated by double Pneumonia on 17th November.

It is mainly thanks to Dr. McHattie's foresight and thoroughness that this Island Protectorate, although in constant intimate shipping contact with neighbouring and distant infected ports, was spared any epidemic of disease during his period of service.

PART I.—SANITATION.

ZANZIBAR TOWN..

General.—In the Report for 1917 the division of the town and suburbs into four administrative districts A. B. C. and D. was fully detailed, each district under the charge of a Sanitary Inspector with his gang of scavengers and carters and further a Junior Inspector allotted to each district for house mosquito investigation and anti-mosquito work. Other Inspectors are constantly employed on anti-mosquito work beyond the town's outskirts, others on trapping and poisoning of rats and dealing with rat infected premises. Probationary Inspectors go through a course of instruction from the Economic Biologist in the species and habits of our local mosquitoes both in Laboratory and in the field, and further receive instruction in the varied routine duties of an Inspector before permanent appointment and the receipt of full salary.

Under the Medical Officer of Health, the Chief Inspector, Mr. F. de Souza, is the Executive Officer responsible for the general sanitation of the town, he receives reports from the Inspectors of nuisances, etc. in their particular districts, serves notices of existing nuisances, and when necessary reports cases to the Medical Officer of Health for opinion or for instituting legal proceedings.

TABLE I.

GENERAL SANITATION. TOWN, 1918.

The routine work performed during the year is tabulated in the following table:—

Inspectors	...	...	...	...	17
Inspections of premises	...	...	...	...	3,555
General Nuisance Notices	...	...	...	...	329
Prosecutions and Convictions	...	...	...	...	8
Visits to Hotels and Boarding Houses	...	...	...	...	2,452
Notices served	...	...	...	...	82
Godowns inspected	...	...	...	...	1,057
Notices served	...	...	...	...	2
Prosecution and Conviction	...	...	...	...	1
Visits to Bakehouses	...	...	...	...	163
Visits to Dairies and Cowsheds,	...	...	...	...	992
Notices served	...	...	...	...	19
Prosecution and Conviction	...	...	...	...	1
Visits to Food-stalls and Markets	...	...	...	...	2,882
Notices served	...	...	...	...	5
Average number of Cesspools oiled weekly	...	...	...	...	161
Average of oil used weekly, (gallons)	...	...	...	...	8
Latrines regularly cleaned	...	...	...	...	4
Public Urinals regularly cleaned	...	...	...	...	5
Vacant Lands and Graveyards regularly cleaned	...	...	...	...	109
Houses cleaned and disinfected	...	...	...	...	16
Cartloads of refuse removed	...	...	...	...	43,323
Rats collected, trapped or poisoned	...	...	...	...	15,960
Pariah dogs destroyed	...	...	...	...	114
Burials of paupers and others carried out	...	...	...	...	93
Visits to dwelling houses etc., for mosquito nuisances	...	...	...	...	41,595
Notices served	...	...	...	...	492
Prosecutions	...	...	...	...	6
Convictions	...	...	...	...	5

Water Supply.—Owing to the loss of pumping plant on its way from England it was impossible to advance further in the estimation of the quantity and potable quality of the proposed additional water supply from Chukwani. Should this water prove safe and its volume as great as is believed, its addition to our present Chem-Chem supply, with the valuable increase in pressure which it will afford, will prove of incalculable benefit to the town. It will be possible to increase the number of hydrants and standpipes, to do away with all the wells in the town, to flush the many so-called drains which now are principally channels of stagnant filth, to lay water under pressure directly into a number of houses, courtyards and institutions, and to provide a limited water carriage system of drainage to certain houses in the higher areas of the town. In the laying on of this additional water supply the greatest care must be taken to control the surface overflow and leakage which occurs from all standpipes and water taps, and to guard the entire length of supply from source to water taps against sewage and other pollution.

At Chem-Chem the recent formation of a large deep pond of water seems to expose the town water supply to a dangerous risk of pollution at its source, a risk against which the old springs are guarded by a surrounding masonry building. If for hydrostatic reasons this exposed surface is essential it becomes necessary to enclose and protect the whole Chem-Chem area by a wall or a barbed wire fencing.

Several perennial mosquito breeding places were done away with by the late Medical Officer of Health's plan of introducing cesspools to receive the overflows from standpipes and hydrants in N'Gambo and other localities.

Drainage.—The late Medical Officer of Health in his Report for 1917 expressed the opinion that if an increased supply and pressure of water was obtained from Chukwani or elsewhere the greater part of the town proper, if not the whole of it, could be connected up to a main sewer outlet at Shangani point, or to a sewage reservoir at that same point of sufficient capacity to take 6 hours sewage from the town and designed to discharge into deep water on the ebbing tide.

We fear the low level of the greater area of the town's site, the overcrowded masonry houses jumbled irregularly and closely together and the want of spaces other than narrow lanes into which to lead down-pipes and under which to lay drains and sewers all render this scheme impracticable; the only areas which might allow of such a drainage scheme appear to be the higher levels of Shangani, Vuga and Bagani, and certain individual houses close on the seashore.

The extremely insanitary condition of existing drains and drainage channels and of connections to them from certain dwelling houses, industrial buildings, etc. has been repeatedly quoted and condemned. So long as sullage disappears from sight it seems to have mattered little whether there existed a head of water to flush it away or not, or how channels and pipes were constructed, laid, jointed and connected. If a large water supply can be acquired and a service of water of satisfactory pressure can be provided at carefully selected points for the flushing of such drains as exist it should be possible to improve matters considerably.

One of the greatest difficulties is to provide efficient surface water drainage for our heavy but infrequent rains and to prevent siltage of sand and rubbish off the friable surfaces of our coral roads.

Cesspools and Privy Pits.—In all areas of the town proper, except for such limited areas as have been mentioned where a local water carriage system of drainage may be possible, as also throughout the whole native quarter of N'Gambo, the disposal of house sullage, etc., into cesspools and of human excreta into privy-pits must continue, and it is more than time this fact was realized and that builders were compelled to utilize better designs and materials in their construction.

Well built cesspools with good pipe connections are infinitely preferable for the disposal of house sullage, etc. than the existing badly designed, waterless drains described above.

Owing to heavy freight charges and limited cargo space available it has been impossible to import the water seal traps and gully traps necessary for the extended experiment of utilizing this method for diminishing the output of town breeding mosquitoes and for economizing in oil. The few traps already introduced are proving most satisfactory.

The marked diminution in mosquitoes in several quarters of the town is undoubtedly mainly due to the increased number of cesspools provided with movable covers and hence easy of access for oiling and stirring.

So soon as the cost of materials becomes less prohibitive the existing shoddy downpipes and pipe connections to cesspools must be replaced by pipes of larger bore and more durable material, and all sharp angled closed pipe junctions must be forbidden and replaced by straight pipes opening over a receiver fixed to the upper end of the next length of piping.

The final pipe connection to a cesspool should be made with an air-break over a form of gully trap or with the lower end of piping led into an S or U trap: access to the trap for cleaning purposes must be provided by a suitably placed movable cesspool cover.

At the close of 1917 the number of registered cesspools with movable covers was 147, at the close of 1918 this number had been increased to 192. The weekly oiling of cesspools involved the use of 380 gallons of an equal mixture of crude and refined kerosine oil.

Sewage Disposal.—Should it become possible to introduce water closets into European houses the present old custom of using sand pail commodes, with the disagreeable features of carriage and disposal frequently described in past Reports, can be abolished. Preparatory to the expected increased water supply and drainage system some houses are already being fitted with water closet receptacles; at present these are fed from tanks filled by hand pumping, and discharge into large cesspits.

With the introduction of water closets and fixed baths great care must be taken to avoid their abuse by ignorant native servants, and the water cisterns, particularly in unoccupied houses, will provide *Stegomyia* breeding places unless protected or emptied frequently.

The privy-pit system obtains in all other than European houses, and in houses of more than one story necessitates a perpendicular pipe connection from each individual privy slot to the pit below the basement. These systems are not constructed in any special small

wing to dwelling houses, owing to the absence of any available surrounding ground in the crowded town area, or to ignorance, or out of economy, and the conditions in a black unventilated back room on the ground floor of such a house through which two or three down pipes pass to the privy-pit below can be imagined, particularly when the joints of the iron pipes (or in still older houses the masonry built shafts) are leaking and the floor is damp and sodden with filth. It seems that this privy-pit system must continue in the very great majority of town houses, but every effort must be made in the case of ruinous houses being re-built and of new blocks of houses to be erected, to secure a sufficient strip of land at the back of a house to allow of such piping and privy-pit to be constructed outside the main block of the house in a small additional wing with free ventilation of the bathroom privy on each floor.

Town Refuse Collection and Disposal.—The difficulties in street cleaning and refuse collection owing to the narrowness of back alleys, the broken surface of lanes, the careless, dirty habits of bazaar communities, the perishing of iron dust bins and wooden house refuse boxes which could not be replaced owing to the high cost and want of materials, the accumulations of masons' rubbish and ruins of partly demolished houses, have all been quoted in past Reports.

The Destructor continues to cause serious nuisance not only from smoke and smell in the N. E. Monsoon, but from inability to cope with refuse during wet weather and also from the obstruction to the out-flow of Creek water by the annually increasing bank of incinerated or partially incinerated refuse.

The existing condition of things as regards nuisance, contamination of market produce and output of myriads of flies is most serious and nothing short of dismantling the destructor and re-erecting it outside the town can be of any avail. With the removal of the destructor the bank of incinerated and charred refuse of six years growth must gradually be carted away to re-encourage the free scouring of the Creek bed by the tidal flow of sea water: but it is feared that the new railway embankment with no culverts or additional bridges to allow of free flow of tidal water has created a further obstruction and still further silting up of banks of sand and filth in the Creek bed.

During the year 43,323 hand-cart loads of refuse were removed from the town; an average of 118·7 per diem.

The suggested erection of small rail incinerators in N'Gambo should prove a valuable help in the disposal of refuse from areas difficult of access for hand-carts, as also in out-district stations. It must always be remembered that during rain they will be useless unless a store of dry, inflammable material is kept near each.

Dairies and Cowsheds.—Frequent reference has been made to the insanitary condition of all the town cowsheds and to the poor quality of milk.

Owing to the prevalence of East Coast Fever infection in the tick infested pastures throughout the Island and close round the town's outskirts milch cows have always been housed within the town area and entirely stall fed, and until the present it has been supposed that the only remedy for correcting existing insanitary conditions was the erection of one or more Government built and controlled cowsheds in selected sites within the town area. But during the year it has been proved by Dr. Aders, Economic Biologist, that regular arsenical dipping of bullocks for slaughter renders them immune against infected ticks and permits of their grazing freely for apparently unlimited periods on our infected pastures, whereas previously they regularly began to sicken with East Coast cattle fever after some three weeks. This will permit of the erection of model cowsheds and dairies, with the necessary dipping tank, outside the town and further will enable milch cows to graze on pasture land instead of spending their entire lives in dirty dark cowsheds within the already overcrowded town area.

Markets.—The condition of the town meat, fish and vegetable markets is still unsatisfactory although the late Medical Officer of Health did much to improve their cleanliness during the year.

They are situated close on the Creek edge so that free flushing and scouring should be possible but the water supply is insufficient, the stand-pipes badly placed, the pipe connections to drains are too small and have antiquated, closed, acute-angled joints, and there are insufficient inspection chambers and manholes. The buildings are insufficient to accommodate the present bulk of produce brought to them so that much of the fruit, vegetables and fish is exposed to contamination by road dust, debris from the neighbouring destructor, dogs, fowls and flies.

Further buildings should be erected, the older buildings thoroughly over-hauled and repaired, the water supply should be increased, the positions of hydrants altered and the entire scheme of drainage improved. Supervision over vendors and their properties should be more strict and private accumulations of boxes and rubbish forbidden.

Coffee Shops and Eating Houses.—The late Medical Officer of Health urged that these should be licensed in order to obtain control over structure, cleanliness and conduct.

Aerated Water Factories.—It is hoped that a Decree for the control of these will be promulgated before long. There is a large consumption of various mineral waters in Zanzibar and the surroundings in which they are manufactured, as also the appliances and materials used, are not always wholesome.

Burial Grounds.—The late Medical Officer of Health referred to the 66 private burial grounds situated within the area of the town proper which have been closed as forming valuable open spaces, but without constant care they fill with rank scrub and weeds and become repositories for neighbours' rubbish.

During the year 450 persons were buried in the Government Burial Ground at Mwembe-Ladu acquired in 1914.

Town Planning and Improvement.—Progress has been made in the acquisition and demolition of huts and small houses in Vuga district with a view to erecting several European houses there.

It will be realized that the development of a definite scheme for town improvement is surrounded by most difficult problems when it is remembered that the whole town area available for bazaar houses is already densely built over, that the majority of these houses are insanitary and lacking in light and ventilation, that all the houses are fully occupied, that many Asiatics are living in absolute squalor, that from age or for want of repairs and upkeep many houses are reaching a state when repairs become impossible, that if a house is ruled unfit for human habitation or structurally dangerous the eviction of the occupants only leads to more gross overcrowding elsewhere and that nothing is achieved by the patching of individual houses in a block of buildings which ought to be considered as a whole.

Although the problem is indeed one of great difficulty it must be tackled since with passage of years conditions are only becoming worse. It has previously been urged that the Administration should build a new commodious block of houses, carefully designed to meet the household requirements of Indian bazaar residents, in Ngambo; into this block families and occupants of insanitary houses and blocks of houses can then be evicted without undue hardship.

The Administration should further set aside a definite annual sum of money for town improvement to be expended over a period of many years in the gradual acquisition of whole blocks of insanitary houses and their reconstruction on hygienic lines.

It is further considered essential that some limit be set to the immigration into this town of pauper Indians as by enforcing the registration of shop and stall-keepers with the imposition of some tax for such registration. It is constantly urged that such a step would be met by strong protest and opposition from the Government of India but it is very certain that Government has no idea of the conditions of squalor and disease in which hundreds of families of their poorer subjects live in small insanitary shops and stalls in the Zanzibar bazaars. It would seem kinder to these individuals themselves, and certainly more wholesome for the health of other bazaar residents, that they should be forbidden to exist and breed children amongst conditions of filth and disease unfit for any human being.

It can be no exaggeration to say that one third of the Indian population of the Zanzibar bazaars exists in such surroundings, their children rendering a heavy toll in lives from pulmonary diseases, diarrhoea, rickets, malnutrition, etc.

Most plans for new buildings or for alterations and additions to existing buildings are submitted by the Director of Public Works to the M. O. H., but without a definite comprehensive scheme for town improvement and the visible example of some new well designed blocks of houses it is difficult to prevent individuals from adding obstructions to neighbouring houses when the whole group may already be hopelessly obstructed on all sides by many hundreds of yards of irregularly massed houses, and when infinitely worse existing cases of obstruction to light and ventilation can be pointed out close at hand. Again it is often impossible to attack a private owner on the obvious need for repairs and structural alterations in his house when he can point to Government and Wakf owned houses in a worse state of dilapidation.

In the few occasions when a house is demolished the space acquired is frequently left littered with heaps of stones which form ideal rat haunts and are tempting as dumping sites for house refuse, and when such a space is cleared it seems nobody's duty to keep it cleared of scrub and weeds.

Offensive Trades.—The question of the continued persistence of certain Offensive Trades in the area of the town proper has frequently been discussed but no action has yet been taken.

The industry of hide curing has greatly diminished within recent years but should not be permitted within the town area. Pottery baking is mainly carried on in the Malindi-Kokoni area and creates nuisance owing to rats harbouring in the accumulations of inflammable refuse and from the smell of the burning of such refuse with the pottery buried and baking in it. Lime burning is carried on in the same area and causes some nuisance to neighbours owing to pungent smoke and fumes. The breaking of nuts for copra, in the absence of sound floors and drainage, results in foul smelling fermenting accumulations of fluid, objectionable though possibly not injurious.

Mosquito Preventive Measures.—Action taken against our particular local species of mosquitoes has certainly been beneficial and has shown what can be accomplished, but much more comprehensive measures must be instituted.

Table II gives the findings of mosquito inspectors for the year in their routine rounds of house-to-house inspection and visits to neighbouring swamp areas.

TABLE II.

Breeding places of various kinds of mosquitoes found in Zanzibar Town during 1918.

Months	Tanks, Cisterns, Drums & Barrels			Drains & Cesspools			Trees & Plants			Old tins, broken bottles etc.			Boats, etc.			Swamps & Pools			Total			Rain fall.
	S	C	A	S	C	A	S	C	A	S	C	A	S	C	A	S	C	A	S	C	A	
1918																						Inches.
January	31	5	0	1	5	0	0	0	0	2	0	0	0	0	0	0	0	0	34	10	0	2.33
February	27	1	0	1	6	0	0	0	0	1	0	0	0	0	0	0	0	0	29	7	0	1.36
March	19	1	0	4	5	0	0	0	0	3	0	0	0	0	0	0	0	0	26	6	0	4.37
April	30	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	52	1	0	11.55
May	25	0	0	6	2	0	0	0	0	4	0	0	0	0	0	2	0	0	35	2	2	9.66
June	24	2	0	6	1	1	0	0	0	5	0	0	0	0	0	0	0	0	35	4	1	6.27
July	30	1	0	3	1	0	0	0	0	7	0	0	0	0	0	0	0	0	40	2	0	4.86
August	47	4	0	5	3	0	0	0	0	7	1	0	0	1	0	0	0	0	60	9	0	0.60
September	47	1	0	2	2	0	0	0	0	7	0	0	0	0	0	0	0	0	56	3	0	0.76
October	57	8	0	1	6	0	0	0	0	11	0	0	0	0	0	0	0	0	69	15	0	5.77
November	26	0	0	0	4	0	0	0	0	6	0	0	0	0	0	0	0	0	33	4	0	2.18
December	16	1	0	0	6	0	0	0	0	4	0	0	0	0	0	0	0	0	20	7	0	6.79
Total	379	24	0	29	42	1	0	0	0	60	3	0	21	1	0	0	0	2	489	70	3	56.50

S—*Stegomyia fasciata*.

C—*Culicinae*.

A—*Anophelinae*.

In designing anti-mosquito measures against their larval stage the particular breeding habits of the individual species of mosquito must constantly be kept in mind, and they may be tabulated shortly thus:—

Measures Aimed against Larval Stage:—

1. *Culex fatigans*.—Almost ubiquitous but showing a preference for dirty water as found in cesspools, broken and obstructed drains, puddles of sullage, ponds of standing rain water, etc.

Measures.—(a) Protection of cesspools by insertion of traps with water seal.

(b) Regular weekly oiling and stirring of cess-pools where (a) is impracticable.

(c) Prevention of accumulations of water by drainage or filling of potential puddles and ponds.

(d) Better laying, flushing and upkeep of drains.

2. *Stegomyia fasciata*.—The most typical house breeder of our mosquitoes and showing a preference for clean water as in household water jars, tanks, cisterns, wells, barrels, tins, etc.

(a) Protection of water vessels, as by canvas or sacking covers weighted at the corners with stones or surrounded by sand bag.

(b) Emptying and drying of vessels and tanks at least once each week.

(c) Collection and disposal of useless vessels.

(d) Introduction of "Millions" fish into wells, etc.

(e) Oiling.

3. *Anopheles costalis*.—Not a town breeder unless pools of standing water after rain temporarily connect its country haunts with the town area. Prefers sedgy grassy pools, the edges of swamps, and the opalescent water of shallow scooped out surface wells.

(a) Drainage of swamps and marshy hollows and constant attention to such drains.

(b) Filling of potential puddles and ponds.

(c) Prohibition of formation of scooped out surface wells in swamp areas already drained, together with the provision of properly built and controlled masonry wells to meet the needs of the agriculturists and cottage residents in the particular area.

(d) Oiling.

(e) "Millions" fish.

Although measures aimed against the larval stages of mosquitoes are of the greatest importance, action against the adults must not be omitted remembering their inability to withstand strong breezes and hot sun and their preference for shelter, dark colours, shade and dampness:—

Measures aimed against Adult Stage:—

1. Culex and Stegomyia.

- (a) Limiting trees, shrubs, hedges and dense foliage round dwelling houses together with rigorous pruning and thinning.
- (b) Controlling growth of scrub and weeds in open spaces, cemeteries, etc.
- (c) Enforcing the cleaning and more frequent whitewashing of bazaar, etc., houses and forbidding bulky accumulations of useless odds and ends in disused rooms.
- (d) Letting light and air into dark rooms and dwellings by inserting additional windows, etc.
- (e) Colouring all walls, window frames, woodwork, etc. of houses in white or light colours.
- (f) Replacing high masonry walls round Arab gardens, grave-yards, etc. by low walls surmounted by iron railings.

2. Anopheles.—Invasion of adults is best prevented by means of creating a wind-swept, sun-baked neutral area between breeding places and dwelling houses:—

- (a) Cutting down bulky dense trees such as mango, etc. and replacing them by well spaced palms and trees of light open foliage.
- (b) Rigorous cutting down of undergrowth and scrub.
- (c) Encouragement of any agricultural crops with habit of low growth.

During the year the increase in accessibility and control of further house cesspools was satisfactory but such, with the introduction of traps, must be widely extended.

More unnecessary and faulty rain water gutterings were removed from shops and dwelling houses.

Notices served on owners or occupants intimating the finding of mosquito larvae on their premises or grounds numbered 484, as compared to 616 in 1917, and resulted in 6 prosecutions. It must be remembered that the issue of a Decree, the serving of notices, and the imposition of a few fines are of little material value and that education, demonstration and example are of far greater utility.

Of works accomplished with a view to checking the entry into town of the country Anopheline those on the outskirts of the town towards Gulioni have been considerable. The swampy area parallel to Lady Janbai Road has been drained to the sea by a permanent concrete open drain which should do much to create a neutral strip between that area of the town and permanent breeding places in the country beyond; the series of hollows known as the Simba Mosque pits, which annually provided jumping off pools between swamps and town, were at last seriously tackled and at the end of the year were being systematically filled under the personal supervision of the Chief Sanitary Inspector: a low lying area amongst dwelling houses at Mkamasini was drained to the sea and two pits at Mchangani were filled in.

No additional work was undertaken in the large drained areas of Sebuleni, Ziwani, Migombani and Kiungoni, and the completion of those expensive systems of drainage by the sinking of a few properly constructed and controlled masonry wells to meet the needs of agriculturists and native cottagers dwelling in those areas has been omitted. As a result instead of a chain of swamps and pools which in the rains became extensive lakes in olden days we now have a well designed and constructed system of drains and, say between Mpoponi Swamp (a permanent anopheline breeding ground and Ziwani Lines and Kilimani Prison, a chain of some twelve or fifteen surface wells scooped out by the residents in that locality. These people must have water and such should be supplied to them by Government if they cannot themselves afford properly constructed wells, and they must be forbidden to dig additional water-holes in these drained areas once a controlled supply is given to them.

PART II.—PREVALENCE OF CERTAIN COMMUNICABLE DISEASES.

Until the outbreak of Influenza in October the Protectorate had been satisfactorily free from epidemic diseases in spite of the prevalence of such diseases in Indian and Mainland Ports. The following number of cases in the East Africa Protectorate were notified during the year by their Principal Medical Officer.

Cerebro-Spinal Meningitis, 125 cases (Mombasa 54 and Nairobi 39 during the year, other localities 32 up to August).

Plague, 30 cases (Mombasa 4 early in the year, Nairobi free other localities 26).

Small-pox, 1385 cases (Mombasa 34 up to September, Nairobi 639 during the year, Kisumu and other localities 812).

Cerebro-Spinal Meningitis.—5 cases occurred with 3 fatalities as compared to 23 with 21 deaths in 1917. All were admitted to the Infectious Diseases Hospital. Of these cases, 2 privates of K. A. Rifles and 1 cooly had recently arrived from the Mainland, one Mohammedan Indian had come from Pemba and a Zanzibar Askari was diagnosed in and transferred from Native Government Hospital.

Plague.—No case of Plague occurred and no infection was found in the routine daily examination of spleen smears from rats.

A total of 15,960 rats was collected at the various stations, as compared to 22,136 in 1917, and from these 13,566 spleen smears were examined microscopically.

Small-pox.—A small outbreak occurred on Uzi Island, lying off the South of Zanzibar Island. Fortunately the first case was isolated and notified by the native "Sheha" or headman of the village with commendable promptitude which enabled rapid action to be taken.

The outbreak only extended to 12 cases with 2 deaths in a previously unvaccinated population. Over 3,500 vaccinations were performed in the surrounding district and villages with 70 % of positive results: the vaccine used was obtained from Bombay and Dar-es-Salaam and the good results were possibly due to very careful storage of the vaccine on ice.

One death from Small-pox occurred in the Infections Diseases Hospital, an African from Dar-es-Salaam Details Camp who arrived in Zanzibar on 29th December, 1917, was taken ill on 5th January, moved into hospital and died on 10th. Vaccination of probable contacts was carried out and no further cases occurred.

Dysentery.—In the town area 23 deaths are recorded as due to Dysentery, and of these 6 are noted as amoebic.

Of these 23 deaths, 12, including the 6 amoebic, were certified by qualified practitioners as compared to 21 in 1917 and 23 in 1916.

Blackwater Fever.—No deaths are recorded amongst residents of Zanzibar town but 2 deaths amongst imported cases, one a Goan from Pemba Island, the other an Indian from Dar-es-Salaam.

Tetanus.—The register shows 3 deaths, all amongst Indians, as compared to 2 in 1917.

Tuberculosis.—In the town area 44 deaths are certified by qualified practitioners and 144 by unqualified persons, the majority by the Inspector of the Dead.

The figure of 44 is comparable to 41 in 1917, and 36 in 1926. The gross total of 188 is comparable to 190 in 1916.

Any cases of tubercular disease other than pulmonary are of the utmost rarity, but the incidence of pulmonary tuberculosis is very serious.

Undoubtedly introduced by Indians, amongst whom 30 of the 44 recorded deaths occurred, and fostered by overcrowding, lack of ventilation and fresh air, purdah incarceration of womenfolk and ignorant disregard of instructions on the occurrence of a case in a household, the disease is finding a receptive soil amongst Arabs and Africans who exhibit very low powers of resistance.

Influenza.—This Protectorate shared in the pandemic of Influenza during the last quarter of the year.

Cases had occurred in the East Africa Protectorate in October, following the arrival in Mombasa harbour of two ships from India on September 23rd and October 17th on both of which there had been deaths from Influenza on the voyage.

On October 26th the M. O. H. issued a circular to local practitioners requesting the notification of all cases of illness suspicious of Influenza. The first death from Influenza and Pneumonia was reported on October 28th, the patient an Ithnasheri Khoja. On November 7th a meeting of medical officers and practitioners was convened to discuss preventive measures and the provision of hospital accommodation and attendance, and a circular of instructions was issued. By November 15th 33 deaths had been reported in town and on the 17th as has been recorded, the M. O. H., Dr. McHattie, succumbed to the disease.

On November 18th all public meetings, processions and entertainments were prohibited by Decree, schools were closed and church services reduced to a minimum.

Free Dispensaries were established in the town and at centres in the out-districts, and all headmen of villages were supplied with simple medicines and instructions for their use printed in Swahili and Arabic.

Inspectors were sent through the out-districts of the Island to report cases, deaths and the progress of the outbreak. A central soup kitchen for the poor was established at the Health Office and thence supplies were distributed to different centres.

Cases were treated at the Government Hospitals, at the Infectious Diseases Hospital, and at four temporary hospitals opened by different Indian Communities for their own people. The last death from Influenza was recorded on December 18th. It is impossible to detail statistics either for town or out-districts, but Dr. A. H. Spurrier, c. m. g., who temporarily resumed his old duties on the death of the late M. O. H., compiled from various sources of information the following figures of deaths:—

ZANZIBAR.—Town, ...	182	PEMBA.—Weti	230
Mwera District	151	Chake Chake	453
Chwaka „	139	Mkoani	156
Mkokotoni „	135		—
	—	Total ...	839
Total, ...	607		—
	—	Total deaths...	1,446
			—

Leprosy.—No further action has been taken as to the acquisition of a suitable Island such as Funzi, off Pemba, but it is hoped that such a site will shortly be acquired to replace the four existing separate inland settlements.

TABLE III.

Walezo Leper Asylum, Zanzibar.

Particulars		Males	Females	Total
Remaining on 1st January, 1918	...	42	60	102
Admitted during 1918	...	7	3	10
Discharged „ „	...	...	...	...
Died „ „	...	13	8	21
Escaped „ „	...	2	1	3
Remaining 31st December, 1918	...	34	54	88

Leper Settlements, Pemba.

Particulars		Nduni	Kengeja	Pujini
Average montly numbers	...	46	34	69

Monthly average total in three settlements, 149

PART III.—PREVENTION OF INFECTIONS DISEASES.

PORT HEALTH SERVICE.

An analysis of the work undertaken during the year under this heading is given in Table IV. below.

As compared to 1917 it will be noted that the number of steamships dealt with showed an increase of 29, the number of passengers landed an increase of over 1,000 while the number of passengers kept under surveillance fell from 2,226 in 1917 to 585 in the year under discussion.

The number of dhows dealt with during the year was 1,508 as against 1,557 during 1917.

The dhow placed in quarantine in January was on account of Small-pox imported from India.

The dhows placed in quarantine during November and December were infected with Influenza.

TABLE IV.

PORT SANITATION RETURN, 1918.

	Arrivals			Restricted ships	Ships Claytonised	Passengers landed	Passengers under surveillance	Persons Vaccinated	Persons placed in quarantine
	British	Foreign	Total						
<i>Steamers—</i>									
January	22	2	24	..	2	374	111	94	..
February	21	2	23	1	2	543	82	190	..
March	22	2	24	3	3	896	152	367	215
April	15	1	16	..	1	462	115	131	..
May	27	1	28	1	3	925	..	409	604
June	21	2	23	1	3	537	125	257	..
July	34	3	37	..	..	612	..	250	790+
August	26	..	26	..	2	673	..	319	153
September	28	..	28	1	1	562	..	182	126
October	26	1	27	..	2	620	..	167	252
November	27	1	28	..	..	381	..	40	46
December	29	1	30	..	..	612	..	..	395
Total	298	16	314	7	19	7197	585	2406	2581
Total for 1917	263	22	285	29	33	6167	2226	2245	2079
<i>Ships—</i>									
January	97	49	146	1	9	254	18	181	48
February	81	72	153	..	13	402	42	354	..
March	127	110	237	..	5	607	33	568	..
April	132	25	157	..	3	340	10	178	..
May	108	23	131	..	3	329	..	234	..
June	79	15	94	..	1	171	..	101	..
July	54	14	68	..	..	102	..	82	..
August	71	20	91	..	..	159	..	132	..
September	89	28	117	..	..	212	..	91	..
October	98	22	120	..	..	231	..	..	..
November	74	17	91	58	..	135	..	..	135
December	83	20	103	103	..	270	..	..	270
Total	1093	415	1508	162	34	3212	103	1921	453
Total for 1917	1131	426	1557	..	1	4133	47	2602	..

+ Crew and passengers of S. S. "Bankoku Maru".

QUARANTINE STATION.

The record of persons quarantined during the year are tabulated in Table V. below in which it will be seen that the only month when the station was clear was June and that the total number of persons quarantined was 3,023 as compared to 2,157 in the previous year

In-patients admitted to the small hospital provided for cases of illness arising amongst those in quarantine numbered 37.

TABLE V.

Return of Persons quarantined during 1918.

During	Remaining	Admitted	Total	Discharged	Died	Remaining	Largest No. on one day	No. of days station occupied	Remarks.
January ..	..	21	21	..	..	21	21	8	Dhow
February ..	21	..	21	21	..	..	21	6	„
March ..	..	215	215	104	..	111	119	31	51 Political, 21 ss. Tuna, 142 coolies ex Dar-es-Salaam, 1 s.s. Walmer Castle.
April ..	111	..	111	111	..	..	111	12	
May ..	..	604	604	604	..	..	604	7	ss. Pundua.
June ..	..	..	..	..	..	..	..	..	
July ..	..	790	790	787	3*	..	790	14	ss. Bankoku Maru.
August ..	..	153	153	56	..	97	112	9	Crew of ss. Hunan and ss. Kansu.
September ..	97	126	223	223	..	..	167	25	„ „ & ss. Pundua.
October ..	..	252	252	157	..	95	101	22	Crew of h. s. Ebani & c. s. Sherard Osborn.
November ..	95	46	141	44	..	97	141	30	Crew of h. s. Ebani,
December ..	97	395	492	344	..	148	270	31	„ ss. Hawa etc. Passengers of various ships.
Total ..	421	2602	3023	2451	3	569	790	195	

* Three men (Comorians) ex ss. "Bankoku Maru" who were under the treatment of their own Surgeon died of Tuberculosis.

Besides the above, 37 Dhows with 242 passengers on board from mainland were quarantined during November and December on account of Influenza.

INFECTIOUS DISEASES HOSPITAL.

From the return of cases admitted to this Hospital as recorded in Table VI below, it will be noticed that on occasions when the Hospital is not utilized for infectious diseases it accommodates sick paupers en route for Walezo Sick Poorhouse, contacts of infectious cases and cases of illness occurring among them, etc.

TABLE VI.

Return of Cases Treated at the Infectious Diseases Hospital, 1918.

Diseases	Remaining of 1917	Admitted	Discharged	Died	Remaining
Cerebro-spinal Meningitis ..	2	5	4	3	..
Chicken-pox ..	3	2	5	..	..
Gonorrhœal Rheumatism ..	..	1	1	..	..
Contused wound ..	..	1	1	..	..
Influenza ..	..	7	7	..	..
Measles ..	..	1	1	..	..
Phthisis ..	..	4	1	3	..
Pneumonia ..	..	3	..	3	..
Small-pox ..	..	5	3	1	1
Paupers ..	1	7	8	..	..
Under Observation ..	..	45	45	..	..
Contacts ..	..	71	70	..	1
Total ..	6	152	146	10	2

PART IV. BACTERIOLOGICAL & CHEMICAL LABORATORIES.

For want of staff all laboratory work was reduced to microscopical, etc. diagnosis of clinical material. It was found impossible to carry out chemical analysis of milk, food, water, etc. Table VII. below gives a summary of work done and it will be noted that of 1865 specimens of faeces (as compared to 563 in 1917) intestinal parasites were found in 1026 of which 968 were *Ankylostoma duodenale*: the majority of these specimens were from batches of prisoners on admission to Central Gaol and from patients in Native Hospital.

TABLE VII.

Bacteriological Laboratory Return, 1918.

Materials	No. examinations.	Remarks.
Blood smears for Malaria ...	108	Sub-tertian present 17 } 26 Benign „ „ 9 }
„ „ „ Filaria ...	461	Microfilaria present 107
„ „ „ Trypanosomes... 2	2	...
Sputa for Tuberculosis ...	81	Positive 24
Nasal Scrapings for B. leprae ...	4	Positive 1
Urines for Bilharzia Ova ...	4	„ 1
„ „ Albumen ...	1	Albumen present 1
„ „ Gonococci ...	12	Positive 1
„ „ Analysis ...	1	
Milk for Pus cells ...	1	Pus cells present 1
Nail-cutting for Tineae ...	2	Tinea Positive 1
Tape-worm for identification ...	1	Taenia Saginata 1
Fluid from Tunica Vaginalis for Filaria ...	1	
Sputa for Pfeiffer bacilli ...	2	Highly suspicious ...
Stomach contents for analysis for Arsenic ...	1	Positive 1
Ascitic Fluid for Echinococcus hooklet or malignant cells... 1	1	
Smears for Gonococci ...	19	Gonococci present in 10
„ of blood from bubo for Gono 1	1	
„ from throat for diplococci.. 8	8	Positive 4
„ of Pus for Ducreys bacilli.. 1	1	
„ from liver & spleen of pig. 2	2	
„ Cerebral spinal fluid for Meningococci ...	2	
Faeces for Ova ...	1865	Ankylostoma duode- nale 968 } Ascaris lumbricoides 46 } Lambliia intestinalis 1 } 1026 Bilharzia Ova Rec. 4 } Variety of Trichonoma 2 } Trichocephalus dispar 5 }
Samples of Mohogo & flour for arsenic ...	2	
Spleen smears of rats for bac. pestis. ...	13566	All negative
Total ...	16,148	

PART IV
VITAL STATISTICS.

Population.—No more recent Census of the population of the Protectorate has been taken since 1910 and there is some doubt as to the accuracy of the figures then obtained which were as follows:—

TABLE VIII.

Population of Zanzibar and Pemba,—Census 1910.

				Males	Females	Children	Total
Zanzibar.							
Zanzibar Town	...	...		15,122	14,304	5,396	34,822
Mwera District	...	...		11,239	13,206	4,656	29,101
Chwaka District	...	...		5,617	7,458	4,553	17,628
Mkokotoni District	...	...		11,013	14,242	6,818	32,073
Total				42,991	49,210	21,423	113,624
Pemba.							
Chake Chake District	...	...		10,757	13,597	8,958	33,312
Weti District	...	...		11,416	11,002	8,307	30,725
Mkoani District	...	...		6,290	7,295	5,487	19,072
Total				28,463	31,894	22,752	83,109
Grand Total				71,454	81,104	44,175	196,733

A new Census is urgently needed and must be compiled with greater care and accuracy than that of eight years ago. Until such is obtained any vital statistics must be entirely unreliable.

(a) Number of births registered in the Town District of Zanzibar during 1918:—

Males	...	215	
Females	...	203	
			418
Still-born			31
Total			449

(b) Nationalities of births registered in Town District of Zanzibar for 1918:—

Ismaili Khoja	111	Memon	...	16
Hindu, ...	54	Baluchi	...	11
Bohora	48	Comoro,	...	8
Ithnasheri Khoja	46	Mainland African,		3
Mohammedan Indian,	34	European,	...	2
Swahili,	27	Parsi,	...	2
Arab,	19	Indian Christian,		2
Shihiri Arab, etc.	17	Persian,	...	1
Goan,	16	Somali	...	1
Total,		418.		

(c) Total number of births registered in the Island of Zanzibar since 1913:—

TABLE IX.

Districts	1918	1917	1916	1915	1914	1913
Town Districts	418	305	296	332	401	576
Mkokotoni District	930	1,559	1,099	1,023	511	634
Mwera	479	430	490	426	245	287
Chwaka	384	392	469	458	190	253
Total	2,211	2,686	2,354	2,239	1,347	1,750

It is evident that the registration of births is inaccurate, but the divergence between registration of births and deaths is so marked that unless a process of depopulation is in progress the error in registration must be considerable.

The comparative figures as registered are shown in the following:—

		During	1913	1914	1915	1916	1917	1918
Town Districts	Births	...	576	401	332	296	305	418
	Deaths	...	1022	1239	1008	1168	1205	1359
Out-Districts	Births	...	1174	946	1907	2058	2381	1793
	Deaths	...	1983	1821	2212	2089	2235	2515

DEATHS.

(a) The number of deaths registered in Town District during 1918 was:—

Males,	...	736
Females	...	623
Total		1359

An increase of 104 over the deaths of 1917.

(b) Nationality of the deceased in Town District:—

Swahili	...	716	Bohora	...	29
Comoro,	...	88	Baluchi	...	16
Ismaili Khoja	...	80	Memon	...	13
Mainland African		78	Goan	...	6
Mohammedan Indian		75	European	...	4
Arab		68	Parsee	...	3
Ithnasheri Khoja		57	Somali	...	3
Hindu	...	56	Other Nationalities		11
Shihiri	...	56			
				Total	1359

(c) General causes of death in Town District:—

In the Annual Report for 1917 only those 339 deaths where the diagnosis had been made by a qualified practitioner were detailed the balance of 916 deaths in town were grouped together as 'Undefined Causes'.

It would seem that the diagnoses of cause of death submitted by Sub-Assistant Surgeons, the Inspector of the Dead, etc., were decidedly of more value than no information at all and in the following return such diagnoses have again been detailed:—

TABLE X.

Return of General Causes of Deaths—Town Districts, 1918.

Diseases			Quali- fied	Unquali- fied	Total
INFECTIVE DISEASES.					
Beri-Beri	...	...	1	...	1
Cerebro-spinal meningitis	...	...	3	...	3
Dysentery-Amœbic	...	...	6	...	6
„ Undetermined	...	...	6	11	17
Erysipelas	...	...	1	...	1
Gonorrhœa	...	...	...	9	9
Influenza	...	...	72	110	182
Leprosy	...	...	12	...	12
Malaria	...	...	23	28	51
Malaria, Chronic	...	...	3	...	3
Blackwater Fever	...	...	2	...	2
Pneumonia	...	...	12	...	12
Pyæmia	...	...	2	...	2
Rheumatism, Acute	...	...	1	...	1
„ , Chronic	...	...	...	12	12
Septicaemia	...	...	1	...	1
Syphilis	...	...	5	2	7
„ Congenital	...	...	2	...	2
Small-Pox	...	...	1	...	1
Tetanus	...	...	3	...	3
Tuberculosis	...	...	44	122	166
Fever, Undefined	...	...	5	7	12
Carried forward			205	301	506

TABLE X.

Return of General Causes of Deaths—Town Districts, 1918.—*Contd.*

Diseases		Quali- fied	Unquali- fied	Total
Brought forward ...		205	301	506
GENERAL DISEASES.				
Anæmia	...	2	65	67
Diabetes	...	2	1	3
Debility	...	28	198	226
LOCAL DISEASES.				
<i>Diseases of the Nervous System.</i>				
Sub-Section I.				
Abscess of Brain	...	1	...	1
Cerebral Hæmorrhage	...	13	...	13
Cerebral Thrombosis	...	1	...	1
Tabes dorsalis	...	1	...	1
Sub-Section II.				
Eclampsia	...	...	1	1
Epilepsy	...	4	6	10
Infantile Convulsions	...	14	33	47
Paralysis	...	1	28	29
Sub-Section III.				
Insanity	...	1	38	39
<i>Diseases of the Circulatory System.</i>				
Aneurism	...	2	...	2
Endocarditis	...	2	...	2
Fatty Degeneration of Heart	...	1	...	1
Valvular, aortic	...	3	...	4
<i>Diseases of the Respiratory System.</i>				
Abscess of Larynx	...	...	2	2
Abscess of Lung	...	1	...	1
Asthma	...	...	9	9
Bronchitis	...	3	122	125
Broncho-pneumonia	...	7	26	33
Congestion of Lungs	...	1	...	1
Emphysema	...	2	...	2
Pleurisy	...	2	...	2
<i>Diseases of the Digestive System.</i>				
Cancer of Liver	...	1	...	1
Diarrhœa	...	20	68	88
„ Infantile...	...	3	...	3
Hepatic Cirrhosis	...	4	...	4
Hernia...	...	...	1	1
Intestinal Obstruction	...	2	...	2
Stomatitis	...	2	...	2
<i>Diseases of the Urinary System.</i>				
Nephritis, Acute	...	3	21	24
Brights Disease	...	7	...	7
Uræmia	...	4	...	4
Carried forward ...		343	920	1263

TABLE X.

Return of General Causes of Deaths—Town Districts, 1918.—*Contd.*

Diseases	Quali- fied	Unquali- fied	Total
LOCAL DISEASES.—(<i>continued</i>)			
Brought forward ...	343	920	1263
<i>Diseases of the Generative System.</i>			
Male Organs.—			
Hæmatocele, Septic ...	1	...	1
Orchitis ...	...	2	2
Female Organs.—			
Abortion ...	1	...	1
Hæmorrhagic Mole ...	1	...	1
Hæmorrhagic, post-partum ...	1	1	2
Puerperal Septicæmia ...	3	4	7
<i>Diseases of Connective Tissues.</i>			
Abscess ...	...	1	1
<i>Injuries.</i>			
General ...	2	...	2
Local ...	8	...	8
<i>Local Diseases</i>			
Tumours, Malignant ...	1	1	2
Poisons ...	3	...	3
<i>Parasites.</i>			
Filariasis and Elephantiasis ...	7	...	7
Ankylostomiasis ...	36	10	46
<i>Unclassified Causes and Undefined Diagnoses</i>			
... ..	5	8	13
Total ...	412	947	1359

(b) Total number of deaths registered annually in the Island of Zanzibar since 1912.

TABLE VII.

Districts	1918	1917	1916	1915	1914	1913	1912
Town District ..	1359	1255	1168	1008	1317	1128	1284
Mkokotoni District ..	1109	947	881	1005	801	889	1116
Chwaka District ..	451	444	394	378	299	328	782
Mwea District ..	955	844	814	829	721	766	1071
Total ..	3874	3490	3257	3220	3138	3111	4253

In connection with the above table it should be remembered that in 1912 there was an epidemic of Cholera which mainly affected the out-districts.

(e) In the following Table No. XII. are recorded the monthly returns of deaths both from town and out-districts of Zanzibar for 1918, against the corresponding average monthly figures for the previous six years.

The higher mortality in 1918 during the months of November and December is due to the incidence of epidemic Influenza in those months.

TABLE XII.

Monthly Distribution of Deaths Registered in Zanzibar Island during 1918 compared with the average for the previous 6 years.

(Deaths at Walezo are *not* included in this return)

		Town	Mwera	Chwaka	Mkokotoni	Total
January	...	75	53	28	75	231
Average 6 years	...	79.8	58.7	29.3	67.8	235.6
February	...	77	59	28	61	225
Average 6 years	...	71.8	47.3	21.7	60.7	201.5
March	...	78	45	28	53	204
Average 6 years	...	86.7	56.3	24.5	61.5	229.0
April	...	66	47	19	65	197
Average 6 years	...	84.0	62.8	29.3	65.3	241.5
May	...	101	59	31	68	259
Average 6 years	...	99.6	66.7	33.8	85.7	285.8
June	...	92	70	33	88	283
Average 6 years	...	112.8	60.5	29.0	81.0	283.3
July	...	92	69	26	104	291
Average 6 years	...	101.2	72.8	36.2	89.8	300.0
August	...	86	89	36	107	318
Average 6 years	...	104.2	79.0	33.5	88.2	304.8
September	...	100	89	33	77	299
Average 6 years	...	88.2	83.7	31.5	71.5	274.8
October	...	91	83	31	84	289
Average 6 years	...	106.5	94.8	36.7	102.3	340.3
November	...	241	135	52	134	562
Average 6 years	...	92.8	92.0	63.2	95.5	343.5
December	...	151	157	106	193	607
Average 6 years	...	90.5	66.2	56.2	70.8	283.7
Total for 1918		1250	955	451	1109	3765
Average 6 years		1118.2	840.8	425.8	940.1	3324.0

PART V. METEOROLOGY.

The following tables have been compiled from the monthly returns published by the Director of Agriculture. The records for Zanzibar are kept by Dr. Copland, those of Banani in Pemba by the Friends' Industrial Mission.

With regard to rainfall it will be noticed that the "great rains" beginning normally in April were more prolonged than is usual and that the "small rains" in the last quarter of the year began early and were also more prolonged than usual, the total rainfall being normal.

TABLE XIII.
Monthly Rainfall—Zanzibar Town, 1910 to 1918.

	1910	1911	1912	1913	1914	1915	1916	1917	1918	Average
January	4.71	0.54	4.36	0.39	2.84	1.74	1.63	2.20	2.33	2.30
February	2.36	0.01	6.99	1.37	0.05	0.76	3.50	4.29	1.36	2.30
March	0.30	9.92	7.39	9.99	8.56	6.03	2.29	4.46	4.37	5.91
April	14.52	13.40	13.09	17.59	12.69	9.62	33.35	16.49	11.55	15.81
May	11.77	17.51	3.45	11.18	3.84	10.30	4.35	10.63	9.66	9.19
June	0.02	2.24	0.47	0.07	0.88	5.00	1.38	4.20	6.27	2.28
July	3.30	1.53	0.03	0.31	0.22	3.94	0.38	1.23	4.86	1.75
August	1.82	1.76	1.04	0.88	3.65	0.45	2.11	2.05	0.60	1.59
September	0.67	1.22	6.59	2.58	1.04	1.17	2.81	2.01	0.76	2.09
October	1.81	2.89	0.98	4.22	0.89	2.63	5.83	2.27	5.77	3.03
November	7.47	6.26	5.70	3.20	4.32	9.38	2.94	6.79	2.18	5.36
December	8.08	1.86	17.82	1.31	4.37	0.61	2.92	0.44	6.79	4.91
Total	56.83	59.14	67.91	53.09	43.35	51.63	63.49	57.06	56.50	56.55

TABLE XIV.

Meteorological Observations—Zanzibar Town and Banani, Pemba, 1918.

	ZANZIBAR TOWN					BANANI PEMBA					
	Rainfall	Relative Humidity	Mean Maximum Temperature	Mean Minimum Temperature	Absolute Maximum Temperature	Absolute Minimum Temperature	Rainfall	Mean Maximum Temperature	Mean Minimum Temperature	Absolute Maximum Temperature	Absolute Minimum Temperature
January	2.33	73.19	85.4	77.9	89.8	71.1	1.28	86.2	76.9	89.5	74.6
February	1.36	71.57	86.1	78.3	88.7	76.8	0.12	86.6	77.3	90.5	75.5
March	4.37	70.74	92.4	74.6	88.1	79.8	0.70	92.0	77.0	89.5	78.7
April	11.55	79.43	85.6	76.9	90.1	73.1	32.03	85.7	77.2	93.0	73.0
May	9.66	79.67	84.4	75.7	81.1	73.4	7.73	85.0	76.0	88.0	74.5
June	6.27	80.03	82.2	74.0	85.5	70.8	5.06	83.0	75.0	87.0	73.0
July	4.86	79.68	80.7	72.6	82.4	71.2	3.38	81.8	73.8	83.0	72.0
August	0.60	76.74	81.1	72.1	83.3	71.0	1.45	81.9	72.8	84.0	70.0
September	0.76	76.03	82.8	72.9	85.9	71.1	1.04	83.4	73.2	85.5	72.0
October	5.77	72.43	83.5	74.5	87.2	73.0	1.00	85.2	75.0	89.0	72.0
November	2.18	74.43	85.2	77.4	88.9	73.4	4.20	86.8	77.8	89.0	75.0
December	6.79	75.35	86.9	79.1	88.7	76.0	11.62	87.1	78.1	89.0	76.0

PART VI.—GENERAL.

CONTROL OF OPIUM.

Dr. D'Mello, who is entrusted with the control and issue of opium to proved habitues in Zanzibar, submits a satisfactory report recording further marked diminution in the number of consumers.

It was recognized early by the Committee appointed to report upon the question of opium consumption and to make recommendations for control of the habit that an abrupt and total stoppage of opium issues at the termination of a fixed period to those habituated to the drug was impossible, although embodied in all Decrees and Ordinances on the subject which were studied, and further that controlled, measured issues of opium to proved consumers must be sold at or below cost price or habitues would be tempted to obtain supplies by smuggling or other illicit means. Since the promulgation of "The Abuse of Opiates Prevention Decree, 1915", the control has been carried out on those lines, the greatest care being taken to prove that the applicants are habitues, continuous efforts made to reduce individual dosage, and the registration of new arrivals from India and elsewhere strongly discouraged.

The average amount of opium consumed per month during 1918 was seven pounds as compared to fourteen pounds in the previous year. The number of registered consumers was reduced from 342 in 1917 to 219 at the close of 1918. The diminution is accounted for by a few deaths amongst the aged, departures to India or the mainland of other habitues, and the renouncement of the drug habit on the part of others.

The following list shows the races and sexes of those on the register at the close of 1918 as compared to 1917:—

Race	1918			1917
	Male	Female	Total	Total
INDIAN:—				
Ismaili ...	12	24	36	74
Suni (Memon) ...	34	12	46	57
Ithnasheri Khoja ...	10	8	18	23
Banyan ...	11	...	11	22
Pathan ...	3	...	3	5
Baluchi ...	3	...	3	4
Rajput ...	3	...	3	4
Bohora ...	1	...	1	2
Cingalee ...	2	...	2	2
OTHERS:—				
Swahili ...	56	4	60	101
Arab ...	26	1	27	34
Persian ...	4	...	4	7
Comoro ...	4	...	4	5
Somali ...	1	...	1	2
Total ...	170	49	219	342

Dr. D'Mello remarks that more than 80% of the habitues are over 40 years of age, the younger consumers being mainly African. He draws attention to the interesting fact that during the epidemic of Influenza no single opium eater contracted the illness, and that they themselves were convinced of the immunity which the drug afforded them.

It will be realized that constant vigilance on the part of the Customs officials and Police are essential to guarantee that the only stock of opium in the Protectorate is that held by the Opium Board, and it is satisfactory to be able to report the seizure of several batches of opium on ships from India towards the close of the year, one seizure of over £240 in value.

WALEZO SICK POOR-HOUSE.

The following table shows the number of Sick Paupers cared for at Walezo Poor House during the year 1918.

Particulars	Males	Females	Total
Remaining on 1st January, 1918 ..	18	24	42
Admitted during the year, 1918 ..	70	64	134
Died ..	49	39	88
Discharged ..	13	7	20
Escaped ..	9	19	28
Remaining 31st December, 1918 ..	17	23	40

FINANCIAL.

The sanctioned Public Health Division Budget for the year 1918 was Rs. 193,940, of which Rs. 169,709-74 cts. were spent, leaving a balance of Rs. 24,230-26 cts.

EXPENDITURE.

Particulars of votes.	Estimate.		Actual Expenditure.				
	Rs.	£.	Rs.	cts.	£.	s.	d.
PERSONAL EMULUMENTS							
Under this heading are included the salaries and duty allowances granted, of the Medical Officers of Health, Economic Biologist, Veterinary Officer, Sub-Assistant Surgeons, Sanitary Inspectors, Inoculator, Vaccinators, Rat Trappers and Dissectors, Mosquito Inspectors, Disinfecting Engineer, Clerks, Caretakers, Scavengers, etc.	136,425	9095	121,735	81	8115	14	5
OTHER CHARGES.							
Under this heading are included the passages and travelling allowances, Suppression of Infectious Diseases, Quarantine Station, Up-keep of Laboratory, Museum, Cattle Quarantine Station, Slaughter House, Markets, Dho-bi Station, Mwenbe-Ladu Graveyard, Leper Asylum, Poor House, Motor Boat, Motor Cycle, Purchase of Disinfectants, Drugs and Dressings, Vaccines, Serums, Sanitary Appliances, Furniture, Uniforms, etc.	57,515	3834	47,973	93	3198	5	3

H. CURWEN, P. M. O.
for Medical Officer of Health.

REPORT OF THE VETERINARY SECTION

FOR THE YEAR 1918.

DISEASES OF STOCK.

Trypanosomiasis.—96 local cattle were examined 11 proved to harbour trypanosomes in their blood. In all instances no clinical symptoms were noticeable. The infected cattle came from various districts of the Protectorate. The type of trypanosome was the same as in former years namely *Trypanosoma pecorum*.

Out of a batch of goats imported from Sadani, East Africa, 14 out of 38 showed trypanosomes of the *T. pecorum* type.

Four sheep from the same port were examined, 2 revealed trypanosomes of the same type. This is the first time that sheep have been found with a natural infection.

Among 20 goats imported from Bagamoyo, 2 showed trypanosomes of the *T. pecorum* type.

Out of 10 camels imported from the Somali coast, one was found to harbour trypanosomes in its blood. The trypanosomes were of the Brucei-Evansi type.

East Coast Fever.—49 cases were detected during the year.

Tuberculosis.—3 cases were found. One in an ox imported for slaughter from Kismayu. Both lungs and mediastinal glands were heavily infected.

Two milch cows from the town sheds, both showed old generalised tubercular lesions.

DEATHS AMONGST STOCK.

As usual a number of imported goats and a few sheep succumbed to Pleuropneumonia, among the latter it is a rare disease.

Undoubtedly these animals arrive with the infection from Kismayu; the disease is probably contracted on the voyage owing to gross overcrowding and lack of sufficient food and water. The malady has not been detected amongst local indigenous goats, although they contract the disease when in contact with infected imported animals.

On arrival in the quarantine park, all animals showing any signs of infection are isolated as far as possible and kept in the open air; by these measures a number of infected animals have recovered.

If fewer goats were imported at a time and were kept during the voyage under more hygienic conditions I feel sure the losses sustained by the importers during the last few years would be considerably lessened.

A number of sheep imported from Kismayu and other Somali coast ports were found to be infected with wire worm (*Hæmonchus contortus*).

Autopsies have been made on all milch cows from the town area.

By these means we shall eventually learn the cause and prevalence of disease among these important animals. Several cases of Tuberculosis have been discovered, most valuable evidence for the Medical Officer of Health.

TABLE No. 1.

Death Report for 1918.

	Deaths in 1916	Deaths in 1917	Deaths in 1918
Milch Cows ex dairies ..	29	43	39
Calves ex dairies ..	20	36	39
Cart Bullocks ..	27	26	30
Oxen ..	0	20	59
Horses ..	5	3	5
Donkeys ..	24	59	47
Mules ..	4	6	3
Goats ..	57	203	661
Sheep ..	0	33	34
Buffaloes ..	2	6	2
Camels ..	1	3	0
Total ..	175	488	919

PIGADURI QUARANTINE PARK.

As in former years all animals from foreign ports have been quarantined for various periods.

587 oxen and 165 goats were slaughtered in quarantine. During the year a small abattoir was constructed in the park, it has answered its purpose admirably. With this addition to the station all animals showing any symptoms of disease can be expeditiously killed and the meat, if fit for human consumption, sent direct to the market. Undoubtedly the construction of a modern abattoir has greatly minimised the risk of importing infectious disease into the Protectorate.

The dipping tank is nearing completion, eventually all animals on their arrival and during their stay in the park will be dipped every 3 days.

Deaths have taken place in the park from East Coast Fever, proving our ground to be infective.

TABLE No. 2.

Number of animals imported and quarantined at Pigaduri Quarantine Park.

	1916	1917	1918
Oxen ..	2199	1694	1845
Cows ..	125	113	47
Calves ..	88	34	36
Goats ..	9389	8591	5820
Sheep ..	0	1286	585
Camels ..	20	65	13
Donkeys ..	15	68	14
Horses ..	2	0	7
Mules ..	5	12	3
Dogs ..	0	0	1
Total ..	11,843	11,663	8,371

The importation of animals for the year under review has shown a slight decrease; chiefly owing to the fact that few cows were imported from India and to the difficulties of shipping from East African ports.

ANIMALS EXPORTED DURING 1918.

Table No. 3 gives the number of animals exported. The majority went to Pemba, a few to the mainland.

TABLE No. 3.

	Animals exported 1916	Animals exported 1917	Animals exported 1918
Oxen ..	54	9	23
Cows ..	179	24	1
Calves ..	46	9	1
Goats ..	279	271	4
Donkeys ..	16	68	7
Mules ..	0	12	0
Horses ..	0	0	0
Total ..	574	331	36

DAIRIES AND COWSHEDS.

The usual inspections have been made from time to time. Their condition is still unsatisfactory. The Medical Officer of Health has formulated a new scheme for a model dairy outside the town.

VETERINARY HOSPITAL.

The total number of cases treated was as follows:—

39 Donkeys sent for treatment, 5 after prosecution.

5 Oxen sent for treatment, 1 after prosecution.

2 Mules sent for treatment, one after prosecution.

1 Horse sent for treatment.

GOVERNMENT ABATTOIR.

All meat has been examined before being passed to the public. During the year under review a new room for cleansing tripe was built and a fly proof store was provided for lights. This measure has considerably lessened the fly nuisance in the abattoir.

TABLE No. 4.

Number of Animals Examined and Slaughtered.

		Slaughtered in Government Abattoirs			Carcases Condemedned.					
					Wholly.			Partially.		
		1916	1917	1918	1916	1917	1918	1916	1917	1918
Oxen	..	2170	1859	1782	0	1	8	208	178	786
Cows	..	40	63	35	0	0	0	10	9	22
Calves	..	24	2	0	0	0	0	0	0	0
Goats	..	12124	9391	7249	0	0	5	2003	1320	2199
Sheep	..	402	1269	584	0	0	0	71	302	97
Camels	..	17	46	9	0	0	0	5	0	0
Total	..	14777	12630	9683	0	1	13	2297	1809	3106

SHAH MOHAMMED KHAN,
Veterinary Officer.

REPORT OF THE BIOLOGICAL SECTION

FOR THE YEAR 1918.

BIOLOGY IN RELATION TO PUBLIC HEALTH AND PREVENTIVE MEDICINE.

The following mosquitoes new to the Zanzibar fauna have been identified.

Anopheles longipalpis, Theo.—The larvæ were found in a stagnant pool not far from the town. No adults have been captured.

Eumelanomyia inconspicua, Theo.—The larvæ of this species are abundant in sluggish streams and are generally found associated with *Anopheles funestus*.

Ochlerotatus leucarthrius, Speiser.—A number of larvæ were obtained in a shallow pool in association with *Anopheles costalis*.

Ochlerotatus argenteopunctatus, Theo.—A few adults were taken in open bush country. The breeding places of the larvæ were not found.

As in former years all larvæ collected by the mosquito brigade were submitted to this section for identification, the mosquito traps were likewise under our control. They have been of great use in assisting the Medical Officer of Health to trace the breeding places of Anophelinae and have given early warning of the invasion of certain outlying districts by Anophelines.

All new members of the mosquito brigade underwent a course of training in mosquito larvæ identification and were not taken on to the permanent staff until they had passed a simple examination.

Several tours of inspection were undertaken with the Medical Officer of Health.

The mosquito fauna of Chwaka, Mkokotoni, Bweleo, Fumba, Dunga and the Mwera river were studied. The sanitary inspectors of some of these stations were shown the more obvious breeding places of Anophelinae and were instructed in palliative measures.

In 1918 a few natives were detailed to search for and report on fly breeding areas in the town. In a very short time innumerable fly centres were found and measures taken for their repression. It was soon proved that stables, cowsheds, goatsheds, in fact wherever animals were kept, were the worst offenders.

In former reports I have listed the town Muscidae, the commonest are *Musca domestica* and *Chrysomya sutorium*. The larvæ of the former show a marked preference for breeding in animal and human manure, the latter for organic refuse such as scraps of meat, fish offal, etc.

In the N. E. monsoon it was noticed that flies (chiefly *M. domestica*) swarmed on the heaps of dried dates exposed for sale in the

markets. At the request of the Medical Officer of Health a series of experiments were undertaken to prove if flies would breed in this medium: the results were negative.

The following insects were found breeding and feeding on dates:—

Silvanus surinamensis, L.—This cosmopolitan pest of food stuffs was extremely common.

Carpophilus sp.—Common in dates which had started fermenting.

Other entomological finds included:—

Necrobia rufipes.—As occasional visitor.

Desmometopa punctulata, Lw.—This small fly was taken in numbers alighting and feeding on decomposing human urine.

Hippelates flavus, Thoms —Has been taken occasionally feeding on meat exposed for sale.

Culicoides immicola, Kieffer.—These minute flies (wrongly called sand flies) abound on sandy beaches, generally those in close proximity to mangrove swamps, they attack man with avidity.

Simulium sp.—Occasionally attacks man, but shows a marked preference for cattle and water buffaloes.

Cordylobia anthropophaga, Grunb.—During the year under review large numbers of larvæ of this species were obtained from rats collected in the Health Office. The larvæ were found in various situations, the commonest site being the base of the shoulder and the inner aspect of the thigh. All species of rats were infected (*M. rattus*, *decumanus* and *alexandrinus*). In all probability the fly deposits her eggs in the nests of the rats. In previous reports the larvæ of this species have been recorded from humans, dogs and guinea pigs.

ENTOMOLOGY IN RELATION TO VETERINARY SCIENCE.

Simulium sp.—As already mentioned, attacks cattle and more especially buffaloes.

No other insects of economic importance to Veterinary Science were found.

ENTOMOLOGY IN RELATION TO AGRICULTURE.

Argyroploce leucotreta, Meyr.—The so called Citrus Codlin Moth. A number of mandarins were obtained in the market which harboured the larvæ of this species. Up to the present this pest has not been recorded from oranges or lemons.

Rhyncophorus phoenicis, F.—Larvæ, pupæ and adults of this species were obtained from an old coconut tree trunk in Pemba. The beetle does not seem to be very prevalent and no records have been obtained of attacks on living coconut trees.

Dendorix anatalus, Hopff.—The larvæ of this moth caused a considerable amount of damage to the pods of the Pigeon Pea (*Cajanus indicus*).

GENERAL ZOOLOGY.

A zoological survey of the two islands has been started and already some interesting species have been collected and identified.

Among the mammals the following are of interest:—

Colobus Kirkii.—For some years this interesting species was considered to be almost extinct. It has now been ascertained that bands of these monkeys are to be met with in the south of the island.

Cephalophus adersi.—This small Duiker was obtained from the south of the island. It was described by Mr. Oldfield-Thomas, F.R.S. in "The Annals and Magazine of Natural History" Vol. 2, 1918.

Galago garnetti.—This seems to be the only Lemuroid in the Protectorate and is extremely common.

A number of new birds have also been added to the collection formed by the Biological Section. Owing to the difficulties of transport a number still remain unidentified.

EXAMINATIONS UNDERTAKEN IN THE BIOLOGICAL LABORATORY.

Number of blood films examined 746

The results of these examinations were as follows:—

CATTLE, COWS AND CALVES.

Trypanosomiasis.

	No examined.	Positive.
Local Cattle	... 177	19 (18 with <i>T. pecorum</i> one with <i>T. theileri</i>)
Imported Cattle	... 266	1 (<i>T. pecorum</i> in a Kismayu ox)

HORSES, MULES AND DONKEYS.

Trypanosomiasis.

	No examined.	Positive.
Local Donkeys	... 68	0
Local Horses	... 2	0
Local Mules	... 2	0

CAMELS.

Trypanosomiasis

	No examined.	Positive.
Imported Camels	... 10	1 (<i>Trypanosme</i> of the Evansi-Brucei group)
Local Camels	... 2	0

GOATS AND SHEEP.

Trypanosomiasis.

	No examined.	Positive.
Local Goats	... 45	0
Bagamoyo Goats	... 20	2
Sadani Goats	... 38	14
Dar-es-Salaam Goats	... 18	0
Comoro Goats	... 10	0
Kismayu Sheep	... 5	0
Sadani Sheep	... 4	2

PIGS.

Trypanosomiasis.

	No examined.	Positive.
Local domesticated Pigs	... 10	0

EAST COAST FEVER.

Town Cows	...	1
Town Calves	...	5
Kismayu Cattle	...	26
Dar-es-Salaam Cattle	...	15
Bagamoyo Cattle	...	1

Total ... 48

The following animals were examined:—

MAMMALS.

Zebra Mongoose (<i>Crossarchus fasciatus</i>)	...	1
Leopard	...	1
Lemurs (<i>Galago garnetti</i>)	...	4
Monkey (<i>Cercopithecus</i> sp)	...	1 (showed <i>Plasmodium</i> sp)
Colobus Monkey (<i>Colobus kirkii</i>)	...	3
Giant Rat (<i>Cricetomys gambianus</i>)	...	4
Domesticated Cats	...	9
Town Dogs	... 36	(31 shewed adult filariae in right ventricle of heart)
Rats (<i>Mus decumanus</i>)	31	(6 with <i>Trypanosoma lewisi</i> . 2 with large unsheathed filarial embryos)

AVES.

Southern Sparrow (<i>Passer diffusus</i>)	...	1
Terek's Sandpiper (<i>Terekia cinerea</i>)	...	1
Gull (<i>Larus</i> sp.)	...	1
Egyptian Kite (<i>milvius aegyptius</i>)	...	1 (<i>Haemoproteus</i> sp)
Finch (<i>Pyromelana flammiceps</i>)	...	2
Sunbird (<i>Cinnyris gutturalis</i>)	...	1
Java Sparrow (<i>Munia oryzivora</i>)	...	1
Ringed Plover (<i>Aegialitis</i> sp.)	...	1
Gannet (<i>Sulva</i> sp.)	...	2

REPTILIA.

House snake (<i>Boodon lineatus</i>)	...	3 (two with <i>Haemogregarines</i>)
Monitor Lizard (<i>Varranus niloticus</i>)	...	1

Besides blood examinations the majority of these animals were dissected, a number of helminths were found and collected. We have now in our collection a large number of worms from domesticated animals, as soon as the material has been worked out a list will be published.

The trypanosome figures are of interest.

It will be seen that out of 177 local cattle, 18 were infected (10·17%). In all cases (except one case of *T. theileri*) the trypanosomes were of the usual short, stumpy, tadpole form (*T. pecorum*). In all cases examined there were no clinical symptoms, in fact the animals seemed to be in the best condition. A few cases were recorded from the town areas but on enquiry it was ascertained that the cattle had been grazing in the outlying districts. As mentioned in former reports the distribution of Trypanosomiasis in the Zanzibar Protectorate seems to be concomitant with the prevalence of *Tabanidæ*. *Stomoxydæ* are abundant in the town (*Tabanidæ* have never been recorded) and it seems as if these flies have little aptitude for carrying *T. pecorum*.

Out of 266 imported cattle (B. E. A. and G. E. A. ports) only one was found to harbour trypanosomes (*T. pecorum* type). A number of cattle were imported from the German Coast, but as far as could be ascertained the majority came from Dodoma.

Trypanosomiasis in horses, mules and donkeys is seldom met with; although *T. pecorum* has been recorded in all three. The majority of cases end fatally.

Some interesting facts have been obtained concerning Trypanosomiasis in goats and sheep. No cases have been recorded from our local herds, on the other hand both goats and sheep imported from Sadani on the mainland show a high rate of infectivity.

Out of 38 goats imported from Sadani 14 were infected with trypanosomes. Out of 5 sheep 2 were infected.

These figures show that certain areas of the mainland coast are severely infected with Trypanosomiasis.

Glossinæ are the true vectors of *T. Pecorum* and do not exist in this Protectorate but as they are prevalent at Sadani on the mainland coast, a virulent strain may be introduced to our island stock by sheep and goats imported from that centre.

It is evident from the above records that Trypanosomiasis does exist in this Protectorate but it is also obvious that the disease does not assume epidemic proportions.

A certain number of animals succumb, on the other hand a number recover. The heaviest mortality occurs amongst Solipedes.

In all probability we are dealing with an attenuated strain, which owing to the absence of Glossinæ from the Protectorate has no chance of being rejuvenated. On the other hand probably fresh

virile strains, which have recently passed through a cyclical development in Glossinæ, are introduced from the mainland.

The only method of combating this disease at present would be the segregation and slaughtering of all infected animals; the majority of these being cattle they could be disposed of to the butchers.

At the same time a most rigorous quarantine should be imposed on all stock from the mainland, especially from such known infected centres as Sadani and Bagamoyo. Animals from these latter ports should be slaughtered in quarantine.

East Coast Fever.—It has been known for some years that the pasturages immediately surrounding the town carry a large number of ticks infected with *Theileria parvum*. During 1918 the dip at the Quarantine Park was completed, a second one has been sanctioned for the town area. With these valuable adjuncts for tick elimination there seems to be no reason why the town pasturages should not be clean areas in a few years.

Two experiments of some interest were carried out during the year to test the infectivity of our pasturages.

The one pasturage commonly used by cattle is composed of very short grass; the area comprises the Mnazi Moja, Recreation Ground, Ziواني and the Polo ground. One ox from Kismayu was exposed to this pasturage with the following result.

Experiment No. 1—Kismayu bull grazed on short pasturage.

3	1	1918	Started grazing
1	4	1918	Noticed ill T 103.
3	4	1918	T 105.
4	4	1918	T 105.6 Puncture of prescapular glands showed Koch's blue bodies.

Animal was slaughtered, Koch's blue bodies in spleen. This animal took 91 days to become infected, during this period there was very little rain, the grass being correspondingly short. On account of this factor it may have been difficult for larval or nymphal ticks to attach themselves to their hosts.

Experiment No. 2.—Kismayu bull grazed on long thick grass.

This pasturage in the Saateni district is rarely used for grazing imported cattle. The grass is long, in some places reaching to the animal's belly.

28	2	1918	Started grazing.
4	4	„	T 103.
5	4	„	T 104.
6	4	„	T 105.
7	4	„	T 107.

On this day the animal died suddenly. Spleen smear showed many Koch's blue bodies.

Animal died in 38 days.

These two experiments show that thick long pasturage is more infective than short. Presumably larval ticks can attach themselves more readily from long dense pasturage.

The museum has been enriched by several new specimens. An arrangement for exchanging material with the "Wellcome Bureau of Scientific Research" in London was inaugurated during 1918.

Many valuable specimens and scientific publications have been received from the Bureau. It is hoped that in the future the collection of duplicate specimens in our museum will be used for exchange purposes with other institutions.

As in former years a large amount of zoological material such as blood smears for Hæmosporidia, human fæces for eggs of Helminths and amœbæ etc. were submitted by the Medical Officer of Health for diagnosis in this section.

W. M. ADERS,
Economic Biologist.

